



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/587,105

05/22/2008

Juergen Frosien

ZIMR/0042

9536

26290 7590 04/26/2011
PATTERSON & SHERIDAN, L.L.P.
3040 POST OAK BOULEVARD
SUITE 1500
HOUSTON, TX 77056

EXAMINER

SAHU, MEENAKSHI S

ART UNIT

PAPER NUMBER

2881

MAIL DATE

DELIVERY MODE

04/26/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/587,105	Applicant(s) FROSIEN, JUERGEN	
	Examiner MEENAKSHI S. SAHU	Art Unit 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 22-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/27/07, 8/24/09</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Amendments to claims filed on 2/11/2011 are acknowledged and the present Office Action is made with all the suggested amendments being fully considered.

2. Claims 1, 5, 6, 10, 13-16, 22-24, 27 and 28 are amended. New claim 44 is added while claim 21 is cancelled without prejudice. Claims 1 to 20 and 22 to 44 are pending in this Office Action. Amendments to claim 10 to correct for the claim objections in the Office Action of 10/12/2010 are noted and the objection is now withdrawn.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Response to Arguments

3. Applicant's arguments filed 2/11/2011 have been fully considered and are persuasive but in view of the amendments to the claims, new grounds of rejection are presented below.

4. The non-statutory obviousness-type rejection to the claims is now withdrawn in view of the amendments to the claims.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1 to 20 and 22 to 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hosoki et al. (US 3,714,422; hereafter Hosoki) in view of Abe et al. (US 6534766; hereafter Abe).

Regarding claims 1, 4, 5, 22 and 39, Hosoki discloses a beam optical component comprising
a charged particle lens for focusing a charged particle beam [Fig 1, col 2 lines 21 to 52],
the charged particle lens comprising:
a first electrode having a first opening defining a first space through which the charged
particle beam can propagate [11 in Fig 5];
a second electrode having a second opening defining a second space through which
the charged particle beam can propagate [10 in Fig 5]; and
whereby at least one out of the first and second electrodes is shaped to comprise
multiple openings for focusing the charged particle beam [10 in Fig 5 has multiple
apertures], and
wherein the multiple openings of an electrode may be replaced by each other without
breaking vacuum [the first electrode = 11 in Fig 1 can be shifted in the transverse
direction and electron beam can be focused on the specimen alternately; for this
transverse motion there is no need to break the vacuum, col 3 lines 32 to 56]

The distance between the openings in the first or second electrode is at least ten
percent larger than the distance between the two electrodes [Fig 5].

Although Hosoki disclose shifting the first electrode they fail to explicitly disclose a
driving means coupled to at least one out of the first electrode and the second
electrode, for aligning the first opening with respect to the second opening,
In analogous art, Abe teach shifting or moving the objective lens in a controlled manner
[28 in Fig 7, the third preferred embodiment] so that the center of the electron beam is

Art Unit: 2881

coincident with the center of the objective lens or aligned and to achieve a focus.

Given the teachings of Abe it would have been obvious to one of ordinary skill in the art at the time of invention to move the first or second electrode in a controlled and precise fashion (using a drive) so as to align the apertures and achieve beam focusing. The motivation to do is to improve focus and avoid aberrations.

Regarding claims 2 to 4, 6, 7, 9-13, Hosoki discloses a third element positioned as an extraction electrode [16 in Fig 8] and moving the shutter will result in a first and second axis [Fig 5].

Regarding claims 8 and 9, Hosoki discloses a charged particle beam [abstract, Fig 1] and an extraction electrode [16 in Fig 8].

Regarding claims 14 and 15, Hosoki discloses moving the electrode in a direction perpendicular to the axis [Fig 5] and in the direction of the axis [Fig 4].

Regarding claims 16 and 20, Hosoki in view of Abe disclose moving the first and second electrode using a driving means [see claim 1 above] and having a good spatial resolution and the means to control the movement would be necessary for a high precision alignment and a good control on the focusing process.

Art Unit: 2881

Regarding claims 23 to 26, Hosoki disclose the first and second electrode and the thickness of the second electrode [10 in Fig 5] is at least a factor of two compared to the first electrode [11 in Fig 5]. Hosoki also disclose the opening on the second electrode [10 in Fig 1] are essentially the same size and the first electrode is rotationally symmetric with respect to the central axis and is rectangular in shape.

Regarding claims 27 to 33, Hosoki in view of Abe disclose the first electrode positioned above the second electrode and that at least one of the electrodes has a driving means to position the electrode so as to obtain an accurate focus [see claim 1 above]. It would be obvious to have a distance piece to accurately hold the two electrodes so that precise focus can be obtained.

Regarding claims 34 to 38, Hosoki discloses a charged particle beam [abstract, Fig 1], a specimen and holder [6 in Fig 1] and a beam aperture [16 in Fig 8].

Regarding claims 40 to 44, Hosoki discloses the voltages [Fig 6], that one of the elements is an electrode [Fig 5], a charged particle beam device [abstract, Fig 1], and that the multiple openings replace one another [Fig 5].

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MEENAKSHI S. SAHU whose telephone number is (571)270-3101. The examiner can normally be reached on Monday - Friday 8AM - 5PM est.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on 571-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2881

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MEENAKSHI S SAHU /
Examiner, Art Unit 2881

/Phillip A Johnston/
Primary Examiner, Art Unit 2881